

Remarks/Arguments:

By this Amendment, applicants have amended claims 1, 29, 34, 36-38, 40 and 43. Claims 1 and 29-43 are pending.

Clarification Requested

At numbered paragraph 1 of the Office Action, the Examiner has stated that the Information Disclosure Statement filed August 28, 2003 "fails to comply with 37 C.F.R. 1.98(a)(3) because it does not include a concise explanation of the relevance as it is presently understood by the individual designated in 37 C.F.R. 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language." Applicants find this statement and the Form 1449A/PTO as acknowledged by the Examiner somewhat confusing. It is applicants' understanding that the Examiner has acknowledged and considered the foreign patent document WO 98/44488, particularly in view of the Examiner's citing this reference as the basis for his rejection of claims. The Examiner cites this reference as PCT/US98/00464. It is applicants' further understanding that it is the Chinese Office Action dated June 27, 2003, which has not been considered by the Examiner. If applicants are mistaken in this understanding, applicants would appreciate an appropriate clarification by the Examiner.

Claim Rejections Under Sections 102 and 103

Claims 1, 29-34 and 37-41 stand rejected under 35 U.S.C. § 102(b) as being anticipated by PCT/US98/00464 (hereinafter referred to as the "PCT Reference"); claims 35, 36, 42, and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the PCT Reference; and claims 36 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the PCT Reference in view of Crane. Based on this Amendment, applicants respectfully traverse the Section 102(b) and Section 103(a) rejections.

Claims 1 and 37 are independent claims. Claims 29-36 depend on claim 1, and claims 38-43 depend on claim 37.

Turning first to independent claim 1, it is directed to a head support mechanism including the following elements:

- a slider having a head attached thereto, for recording data to and/or reproducing data from a disk,
- a slider holding plate for holding the slider,

- a pair of substrates each having a piezoelectric element attached thereto,
- elastic hinges for connecting the slider holding plate and the pair of substrates, and
- **a dimple for supporting the slider holding plate such that the slider holding plate is rotated in a pitch direction, a roll direction, and a yaw direction,**
- **wherein the slider is rotated around the dimple in the yaw direction by contraction and/or expansion of at least one of the piezoelectric elements.**

Applicants respectfully submit that the head support mechanism defined by claim 1, as well as the claims dependent thereon, is patentably distinguished from the PCT Reference and the Crane Patent at least based on the feature of a dimple for supporting the slider holding plate such that the slider holding plate is rotated in a pitch direction, a roll direction, and a yaw direction, with the slider being rotated around the dimple in the yaw direction by contraction and/or expansion of at least one of the piezoelectric elements. This feature is hereinafter generally referred to as the "Dimple-Slider Feature" of applicants' claimed invention. Simply put, the Dimple-Slider Feature is neither taught nor suggested in the references of record.

The amendment of claim 1 (as well as claim 37) to include the Dimple-Slider Feature is not the addition of new matter but is based on the application as originally filed. Support for this amendment is found throughout the specification; for example, see page 25, lines 7-16 and page 31, lines 18-31. The basis for applicants' amendment is to more clearly clarify (i) in which directions the slider holding plate (supported by the dimple) is rotated and (ii) in which direction the slider is rotated around the dimple by contraction and/or expansion of at least one of the piezoelectric elements.

As noted above, the slider in applicants' claimed invention is rotated around the dimple in the yaw direction by contraction and/or expansion of at least one of the piezoelectric elements. The dimple is the center of rotation of the slider holding plate in three directions (i.e., the pitch direction, the roll direction, and the yaw direction).

Because of the Dimple-Slider Feature of applicants' claimed invention, the inertia of a portion rotated in the yaw direction by contraction and/or expansion of at least one of the piezoelectric elements can be smaller than that taught by the prior art, including the cited

references. As a result of this Feature, (i) the slider can be quickly rotated even if the piezoelectric element is contracted and/or expanded at a high frequency by applying a high frequency AC voltage and (ii) the resonant frequency of the slider in the yaw direction caused by contraction and/or expansion of the piezoelectric element is increased. Thus, the phase delay of the rotation of the slider in the yaw direction is improved in applicants' claimed invention. These advantages are neither found nor appreciated in the references of record.

Applicants' also note, in addition, that only one point serves as the center of rotation of the slider holding plate for the three directions. Therefore, the friction between the slider holding plate and the dimple is reduced, so that the head can be displaced by a large amount even by a small rotational force.

The Dimple-Slider Feature and the advantages associated with such Feature are neither taught nor suggested in the PCT Reference.

The PCT Reference in general refers to a flexure microactuator. The Examiner in the Office Action associates the lever plate 70 (shown in Fig. 7 of the PCT Reference) with the slider holding plate in applicants' claim 1. The Examiner also associates the load point 60 shown in Figs. 2 and 7 of the PCT Reference with the dimple in claim 1. According to the PCT Reference, however, it is not the load point 60 that supports the lever plate 70 so that the lever plate 70 is rotated in the yaw direction. See arrow 86 in Fig. 7 of the PCT Reference. In other words, the slider 24 in the PCT Reference is not rotated around a dimple in the yaw direction by contraction and/or expansion of the piezoelectric element, as required by applicants' claim 1. According to the PCT Reference, the lever plate 70 is supported by the load point 60 so that the lever plate 70 can be rotated in the pitch direction and the roll direction. But it is the hinge 80 that supports the lever plate 70 so that the slider can be rotated in the yaw direction. The slider in the PCT Reference is rotated in the yaw direction around the hinge 80 by contraction and/or expansion of the piezoelectric element. See page 7, lines 3-6 and Fig. 7 in the PCT Reference.

Because of the above construction of the flexure microactuator of the PCT Reference, the radius of rotation in the yaw direction by contraction and/or expansion of the piezoelectric element is larger when the radius is from the hinge 80 to the head 40 than when the radius is from the load point 60 to the head 40. Thus, the rotated portion in the yaw direction by contraction and/or expansion of the piezoelectric element is large. As a result, the slider in the PCT Reference cannot be quickly rotated in the yaw direction when the piezoelectric element is

contracted and/or expanded at a high frequency. In addition, the resonant frequency of the slider in the yaw direction is low, so that the phase delay of rotation of the slider in the yaw direction cannot be improved. Accordingly, the advantages offered by applicants' Dimple-Slider Feature are not present in the flexure microactuator of the PCT Reference.

Based on the foregoing, it is apparent that the PCT Reference does not teach or suggest the Dimple-Slider Feature and its associated advantages. Lacking this Feature, the PCT Reference can neither anticipate nor render obvious applicants' claim 1, as well as the claims dependent thereon.

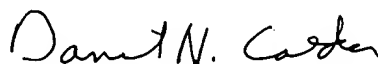
Claim 37 is also directed to a head support mechanism and substantially includes the Dimple-Slider Feature as noted above. Thus, claim 37 and the claims dependent thereon are likewise patentably distinguished from the PCT Reference.

The Crane Patent has only been cited with respect to dependent claims 36 and 43. The Crane Patent in general refers to a microactuator suspension and has principally been identified with respect to a conductor pattern. But nowhere in the Crane Patent is there any teaching or suggestion of a slider that is rotated by contraction and/or expansion of a piezoelectric element. Moreover, the Crane Patent simply lacks any teaching or suggestion of the Dimple-Slider Feature of applicants' claimed invention. In other words, the Crane Patent does not rectify the deficiencies heretofore discussed with respect to the PCT Reference.

Based on the foregoing, applicants' respectfully submit that claims 1 and 29-43 are neither anticipated nor obvious in view of the references of record, and applicants' therefore request that the Section 102(b) and Section 103(a) rejections be withdrawn.

In view of the foregoing remarks and amendments, applicants respectfully submit that claims 1 and 29-43 are in condition for allowance. Reconsideration and allowance of all pending claims are respectfully requested.

Respectfully submitted,



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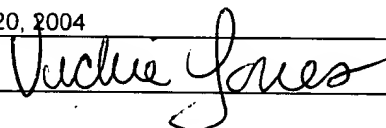
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